HITACHI SERVICE MANUAL

TY

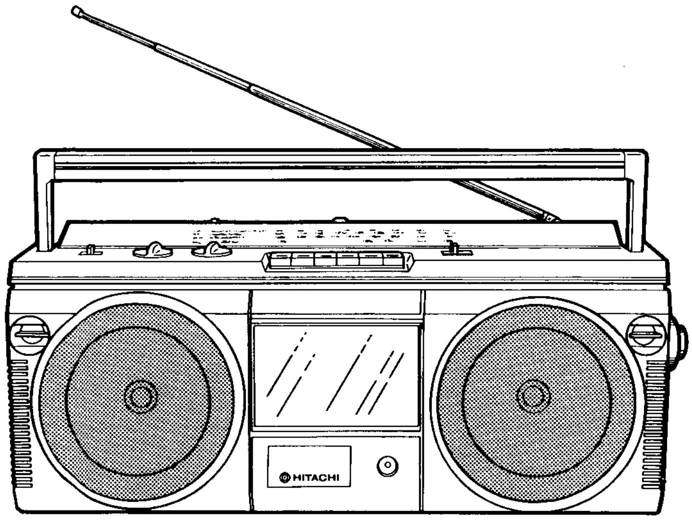
No. 559 E

TRK-720

[E, E(BS), W, W(UN), AU]

TN-21V-582 chassis

AQ11



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SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with ⚠ in the circuit diagram and printed wiring board.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SPECIFICATIONS

●GENERAL SECTION

Semiconductors:	ICs: 5 Transistors: 2 [for E(BS), W, W(UN), AU] 3 [for E] Diodes: 7 [for E(BS), AU] 8 [for E, W, W(UN)] LEDs: 1 Varicap: 1
Power Supply:	AC: 220V, 50Hz [for E] AC: 240V, 50Hz [for E(BS), AU] AC: 110–127V/200–220V/230–250V, 50/60Hz [for W, W(UN)] DC: 12V [IEC R20 ("D" cell) x 8 or equivalent] Car: Use car battery adaptor (12V) [for W, W(UN)]
Power (Mains) Consumption:	18W
Power Output:	25W P.M.P. (AC operation) 3.5W/CH (10% T.H.D. DC operation)
Speakers:	12cm, 4ohms x 2 2cm, 300ohms x 2
Dimensions:	505(W) x 209(H) x 156(D) mm
Weight:	4.0kg (with batteries)

●TUNER SECTION

Circuit System:	FM/SW/MW/LW 4 bands superheterodyne [for E, E(BS)] FM/SW2/SW1/MW 4 bands superheterodyne [for W, W(UN), AU]
Tuning Range	FM: 87.5 to 108 MHz [for E, E(BS)] FM: 88 to 108 MHz [for W, W(UN), , AU] SW: 6 to 18 MHz [for E, E(BS)] SW2: 7 to 22 MHz [for W, W(UN), AU] SW1: 2.3 to 7 MHz [for W, W(UN), AU] MW: 530 to 1,605 kHz LW: 150 to 285 kHz [for E, E(BS)]
Sensitivity:	FM: 13 dB (pra.), 5 dB (max.) SW: 30 dB (pra.), 20 dB (max.) [for E, E(BS)] SW2: 30 dB (pra.), 24 dB (max.) [for W, W(UN), AU] SW1: 46 dB (pra.), 38 dB (max.) [for W, W(UN), AU] MW: 50 dB (pra.), 40 dB (max.) LW: 55 dB (pra.), 48 dB (max.) [for E, E(BS)]

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

RADIO CASSETTE TAPE RECORDER

May 1987 **TOYOKAWA WORKS**

Intermediate Frequency:	FM: 10.7 MHz SW/MW/LW: 465 kHz [for E, E(BS)] SW2/SW1/MW: 455 kHz [for W, W(UN), AU]
Antennas (Aerials):	FM/ SW/SW2: Rod antenna (aerial) SW1/MW/ LW: Ferrite antenna (aerial)

● TAPE RECORDER SECTION

Tape:	Cassette tape
Tape Speed:	4.75 cm/s
Recording System:	AC bias, 55 kHz
Erasing System:	Magnet
Frequency Response:	Normal: 60 to 10,000 Hz
S/N (Signal to Noise Ratio):	40 dB
Wow and Flutter:	0.25% (WRMS)
Crosstalk:	Between tracks: 60 dB Between channels: 30 dB
Erasing Ratio:	60 dB
Input sensitivity and impedance:	CD/Line in: 600mV, 60kohms
Output load impedance:	Headphones: 8 to 100ohms
Distortion:	3%
Motor:	DC micromotor
Head:	Permalloy

Specifications are subject to change without notice for performance improvement.

DISASSEMBLY

1. Removing cassette lid (Fig. 1)

Open the cassette lid, and pull out it to the front while applying a force in the direction of the arrow.

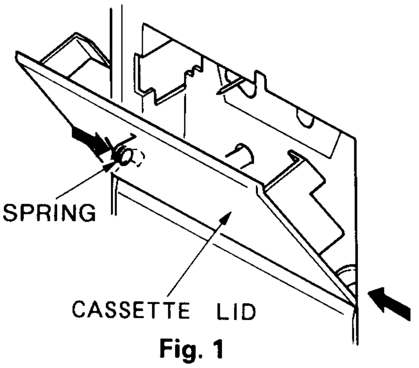

SPRING
CASSETTE LID

Fig. 1

2. Removing rear case (Fig. 2)

(1) Remove the battery lid.

(2) Remove 9 screws Ⓐ and remove the rear case.

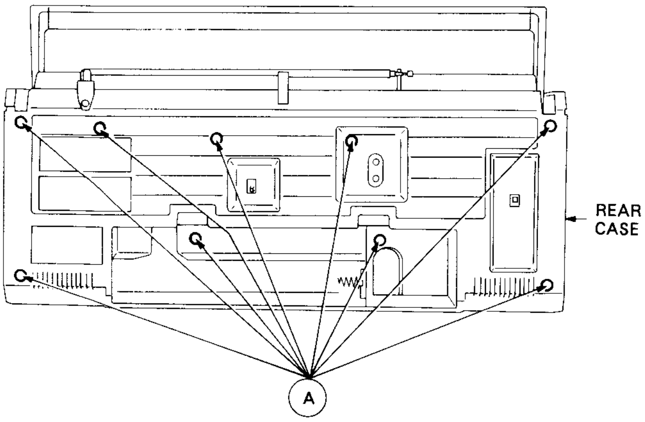


Fig. 2

3. Removing main P.W.B. (Fig. 3)

(1) Remove the VOLUME and the TONE control knobs.

(2) Remove the FUNCTION and the BAND SELECTOR knobs, then remove the main P.W.B..

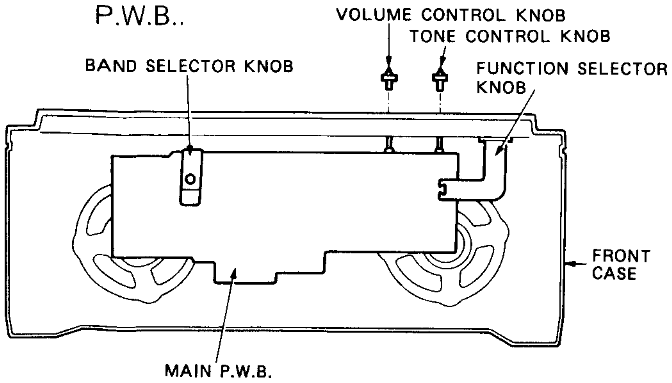

VOLUME CONTROL KNOB
TONE CONTROL KNOB
BAND SELECTOR KNOB
FUNCTION SELECTOR KNOB
FRONT CASE
MAIN P.W.B.

Fig. 3

4. Removing power supply P.W.B. (Fig. 4)

(1) Remove 2 screws Ⓑ.

(2) Remove the power supply P.W.B. from the rear case.

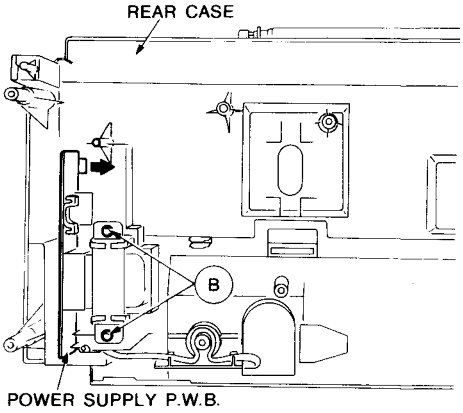

REAR CASE
B
POWER SUPPLY P.W.B.

Fig. 4

5. Removing the cassette deck mechanism (Fig. 5)

Disengage 3 tabs Ⓒ and remove the cassette deck mechanism.

6. Removing speakers (Fig. 5)

(1) Remove 8 screws Ⓓ.

(2) Remove the speakers.

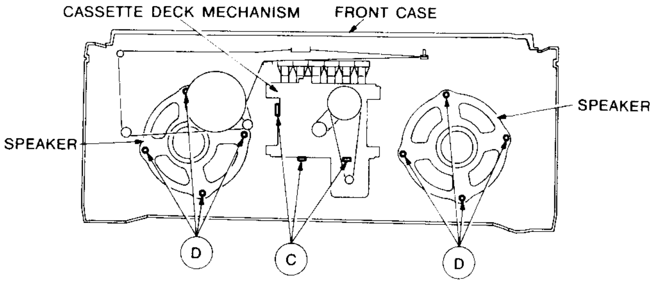

CASSETTE DECK MECHANISM
FRONT CASE
SPEAKER
SPEAKER
D
C
D

Fig. 5

ADJUSTMENTS

1. Radio Section

- **Adjustment point [for W, W(UN), AU]**

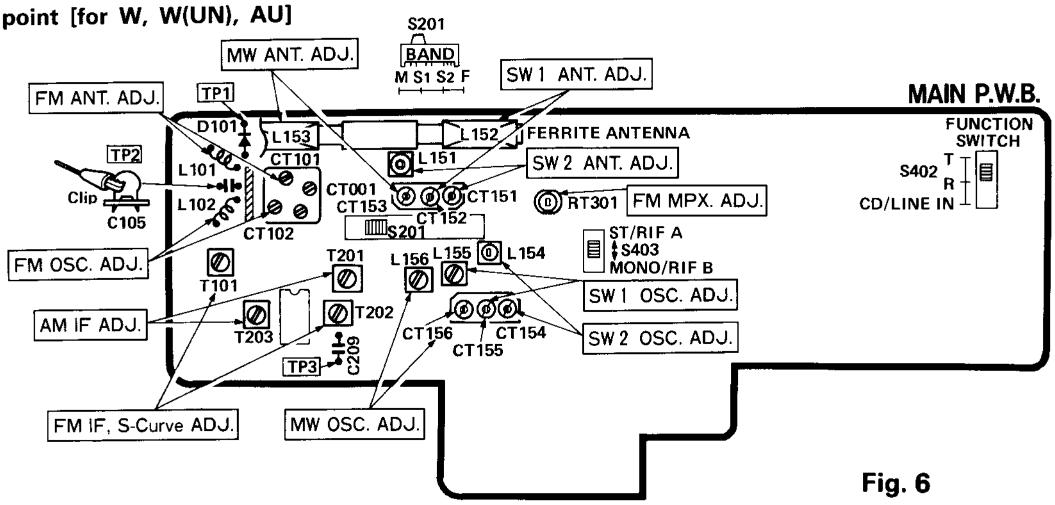

S201
BAND
M S1 S2 F
MW ANT. ADJ.
SW 1 ANT. ADJ.
FM ANT. ADJ.
TP1
MAIN P.W.B.
D101
L153
L152
FERRITE ANTENNA
FUNCTION SWITCH
TP2
L101
CT101
L151
SW 2 ANT. ADJ.
S402
T
R
CD/LINE IN
Clip
C105
L102
CT001
CT153
CT151
RT301
FM MPX. ADJ.
CT152
S201
CT102
ST/RIF A
S403
MONO/RIF B
FM OSC. ADJ.
T201
L156
L155
L154
T101
SW 1 OSC. ADJ.
AM IF ADJ.
T202
T203
CT156
CT154
CT155
SW 2 OSC. ADJ.
TP3
C209
FM IF, S-Curve ADJ.
MW OSC. ADJ.

Fig. 6

AM Section for W, W(UN), AU (FM/SW2/SW1/MW 4bands)

Step		Adjustment Item	Measuring Instrument and Connection			Genescope or Signal Generator Frequency	Dial Pointer Position	Adjust	Reading
			Measuring Instrument	Input Terminal	Output Terminal				
1	(1)	AM IF	● Genescope (455 kHz)	Ferrite antenna (Note 5)	TP3	455 kHz	Highest	T201 T203	Note 6
	(2)					Repeat step (1)			
2	(1)	SW2 OSC. (Covering)	● AM signal generator (400 Hz, 30% mod.) ● VTVM ● Oscilloscope	TP1 (thru SW dummy antenna) (Note 7)	TP3	6.7 MHz	Lowest	L154	Max.
	(2)					23 MHz	Highest	CT154	
	(3)					Repeat steps (1) and (2)			
3	(1)	SW2 ANT. (Tracking)				8 MHz	8 MHz	L151	Max.
	(2)					20 MHz	20 MHz	CT151	
	(3)					Repeat steps (1) and (2)			
4	(1)	SW1 OSC. (Covering)	● AM signal generator (400 Hz, 30% mod.) ● VTVM ● Oscilloscope	Ferrite antenna (Note 5)	TP3	2.2 MHz	Lowest	L155	Max.
	(2)					7.3 MHz	Highest	CT155	
	(3)					Repeat steps (1) and (2)			
5	(1)	SW1 ANT. (Tracking)				2.7 MHz	2.7 MHz	L152	Max.
	(2)					6.3 MHz	6.3 MHz	CT152	
	(3)					Repeat steps (1) and (2)			
6	(1)	MW OSC. (Covering)	● AM signal generator (400 Hz, 30% mod.) ● VTVM ● Oscilloscope	Ferrite antenna (Note 5)	TP3	515 kHz	Lowest	L156	Max.
	(2)					1650 kHz	Highest	CT156	
	(3)					Repeat steps (1) and (2)			
7	(1)	MW ANT. (Tracking)				600 kHz	600 kHz	L153	Max.
	(2)					1400 kHz	1400 kHz	CT153	
	(3)					Repeat steps (1) and (2)			

- **Adjustment point [for E, E(BS)]**

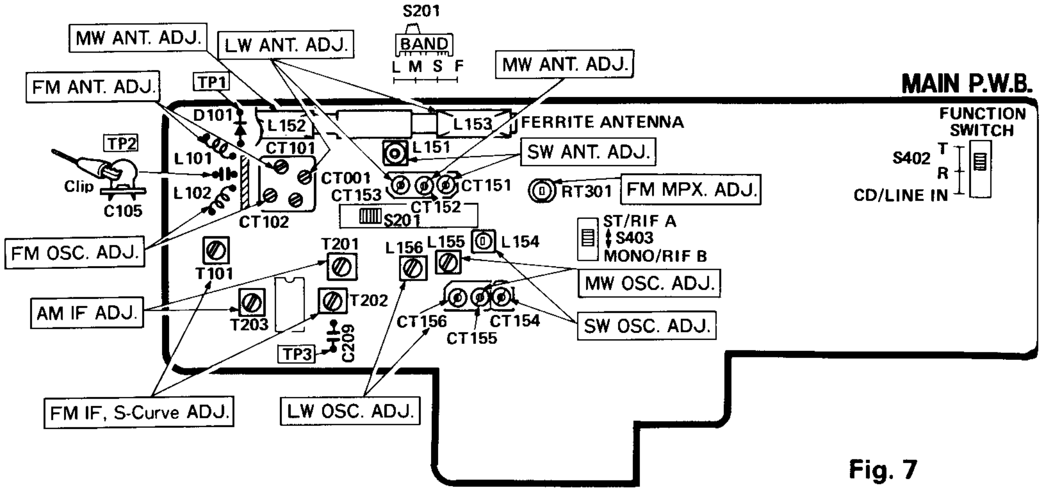

S201
BAND
L M S F
MW ANT. ADJ.
LW ANT. ADJ.
MW ANT. ADJ.
FM ANT. ADJ.
TP1
MAIN P.W.B.
D101
L152
L153
FERRITE ANTENNA
FUNCTION SWITCH
TP2
L101
CT101
L151
SW ANT. ADJ.
S402
T
R
CD/LINE IN
Clip
C105
L102
CT001
CT153
CT151
RT301
FM MPX. ADJ.
CT152
S201
CT102
ST/RIF A
S403
MONO/RIF B
FM OSC. ADJ.
T201
L156
L155
L154
T101
MW OSC. ADJ.
AM IF ADJ.
T202
T203
CT156
CT154
CT155
SW OSC. ADJ.
TP3
C209
FM IF, S-Curve ADJ.
LW OSC. ADJ.

Fig. 7

AM Section for E, E(BS) (FM/SW/MW/LW 4bands)

Step		Adjustment Item	Measuring Instrument and Connection			Genescope or Signal Generator Frequency	Dial Pointer Position	Adjust	Reading
			Measuring Instrument	Input Terminal	Output Terminal				
1	(1)	AM IF	● Genescope (465 kHz)	Ferrite antenna (Note 5)	TP3	465 kHz	Highest	T201 T203	Note 6
	(2)					Repeat step (1)			
2	(1)	SW OSC. (Covering)	● AM signal generator (400 Hz, 30% mod.) ● VTVM ● Oscilloscope	TP1 (thru SW dummy antenna) (Note 7)	TP3	5.8 MHz	Lowest	L154	Max.
	(2)					18.5 MHz	Highest	CT154	
	(3)					Repeat steps (1) and (2)			
3	(1)	SW ANT. (Tracking)				6.5 MHz	8 MHz	L151	Max.
	(2)					16 MHz	20 MHz	CT151	
	(3)					Repeat steps (1) and (2)			
4	(1)	MW OSC. (Covering)	● AM signal generator (400 Hz, 30% mod.) ● VTVM ● Oscilloscope	Ferrite antenna (Note 5)	TP3	515 kHz	Lowest	L155	Max.
	(2)					1650 kHz	Highest	CT155	
	(3)					Repeat steps (1) and (2)			
5	(1)	MW ANT. (Tracking)				600 kHz	2.7 MHz	L152	Max.
	(2)					1400 kHz	6.3 MHz	CT152	
	(3)					Repeat steps (1) and (2)			
6	(1)	LW OSC. (Covering)	● AM signal generator (400 Hz, 30% mod.) ● VTVM ● Oscilloscope	Ferrite antenna (Note 5)	TP3	145 kHz	Lowest	L156	Max.
	(2)					290 kHz	Highest	CT156	
	(3)					Repeat steps (1) and (2)			
7	(1)	LW ANT. (Tracking)				160 kHz	100 kHz	L153	Max.
	(2)					270 kHz	270 kHz	CT153 CT001	
	(3)					Repeat steps (1) and (2)			

FM Section *( ) : for E

Step		Adjustment Item	Measuring Instrument and Connection			Genescope or Signal Generator Frequency	Dial Pointer Position	Adjust	Reading
			Measuring Instrument	Input Terminal	Output Terminal				
1			Turn T202 fully counterclockwise.						
	(1)	FM IF	● Genescope (10.7 MHz)	TP2	TP3	10.7 MHz	Highest	T101	Note 1
	(2)	S-Curve						T202	Note 2
2	(1)	FM OSC (Covering)	● FM signal generator (400 Hz, 30% dev.) ● Oscilloscope ● VTVM	TP1 (thru FM dummy antenna) (Note 3)	TP3	87MHz *(87.35 ± 0.15MHz)	Lowest	L102	Max.
	(2)					109MHz	Highest	CT102	
	(3)					Repeat steps (1) and (2).			
3	(1)	FM ANT. (Tracking)				90 MHz	90 MHz	L101	Max
	(2)					106 MHz	106 MHz	CT101	
	(3)					Repeat steps (1) and (2).			
4	(1)	FM MPX. (Multiplex)	● Frequency counter	Connect a 10μF 25V electrolytic capacitor between the No. 1 pin of IC301 and the ground.	TP5	—	—	RT301	38 kHz ±50 Hz (Note 4)

Note:

1. Feed in a weak signal to TP2 from the genescope. Adjust T101 for maximum gain and the waveform indicated in Fig. 8. If the center of the waveform cannot be lined up on the marker, adjust the right/left balance.

Adjust the genescope output so that there is a little noise riding on the leading edge.

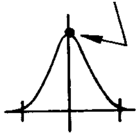


Fig. 8

2. Use the T202 core to from the S-curve shown in Fig. 9.Adjust the symmetry of A and B about point C for linearity.

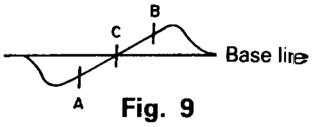
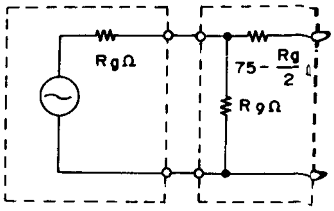


Fig. 9

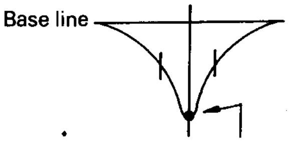
3. FM dummy antenna shows Fig. 10 .



Rg: SG's output impedance

Fig. 10

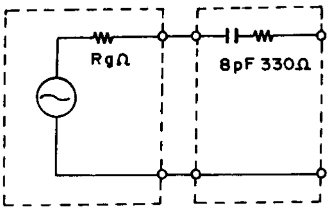
4. Connect the frequency counter to TP5 and connect a 330 kohms resistor parallel with the frequency counter.
5. Connect AM signal generator to loop antenna, bring near to ferrite antenna.
6. Feed in a weak signal from the genescope. Adjust T201, T203 for maximum gain and the waveform of Fig. 11.



Adjust the genescope output so that there is a little noise riding on the leading edge.

Fig. 11

7. SW dummy antenna shows Fig. 12.



Rg: SG's output impedance

Fig. 12

2. Tape Recorder Section

Perform the following adjustments in the sequence stated after cleaning the head, pressure roller, and capstan with a head cleaning stick moistened in alcohol.

Step	Adjustment Item	Measuring Instrument & Connection			Check Tape	Mode	Adjust	Reading
		Measuring Instrument	Input Terminal	Output Terminal				
1	Tape speed	● Frequency counter	—	Headphones Jack	Tape speed adjustment tape (3 kHz)	Playback	Semivariable resistor in the motor (Fig. 14)	3 kHz ± 20 Hz (Note 1)
2	Head azimuth	● VTVM	—	Headphones Jack	Head azimuth adjustment tape(10 kHz)	Playback	Azimuth adjusting screw	Output max. (Note 2)

Note:

1. Adjust within 30 sec. after heat-running for more than 20 minutes.
2. When the maximum values of both channels are different, adjust to the maximum value of the L channel. In this case, the difference between the maximum values of both channels should be within 2 dB.

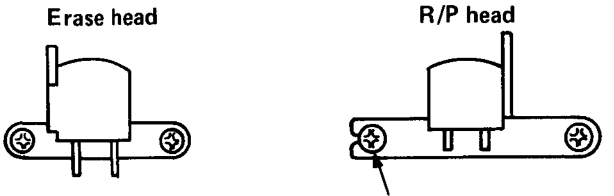
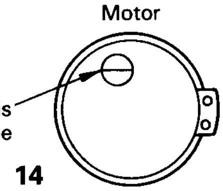


Fig. 13



Insert the screw driver in this part of motor and adjust the tape speed.

Fig. 14

INSPECTION OF MECHANISM

Item	Checking item		Reference value	Remarks
1	Pressure of pressure roller		300 – 500g	Note (Refer to page 6)
2	Take-up torque		30 – 60 g·cm	
3	Fast forward/Rewind torque		50 g·cm or more	
4	Auto-Stop sensor operation force		40 – 75 g	
5	Brake torque		15 g·cm or more	Measured in stop mode
6	Back tension torque	Take-up	1 – 6 g·cm	
		Supply	2 – 6 g·cm	
7	Flywheel thrust gap		0.05 – 0.5 mm	

Note:
Set this unit in the playback mode and press the pressure roller in the direction of the arrow using a fan type tension gauge, and measure the pressure when the pressure roller is released form the capstan.

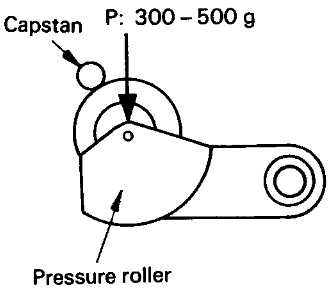

Capstan
P: 300 – 500 g
Pressure roller

Fig. 15

LUBRICATION

Lubricate one or two drops of oil to rotating point or lubricate grease to sliding point.
Lubricate the respective parts listed once every 1000 hours or once a year under normal conditions of use. Avoid oiling them excessively, or rotation may become irregular because of oil splashes.

Lubrication point		Oil or Grease
Rotary section	Metal and metal	Pan motor oil (10W-40)
	Mold and metal	Sonic slider oil (# 1600)
Sliding section	Metal and metal	Hitasol (MO-138)
	Mold and mold Mold and metal	White grease (FL-LUBE-A)
Spring resonance prevention		Floil (GB-TS-1)

DIAL CORD SETTING

Stringing method

- String the dial cord to each rollers according to the order from ① to ⑧ after turned the pulley to the end of clockwise direction.
  Set the pointer to setting position.

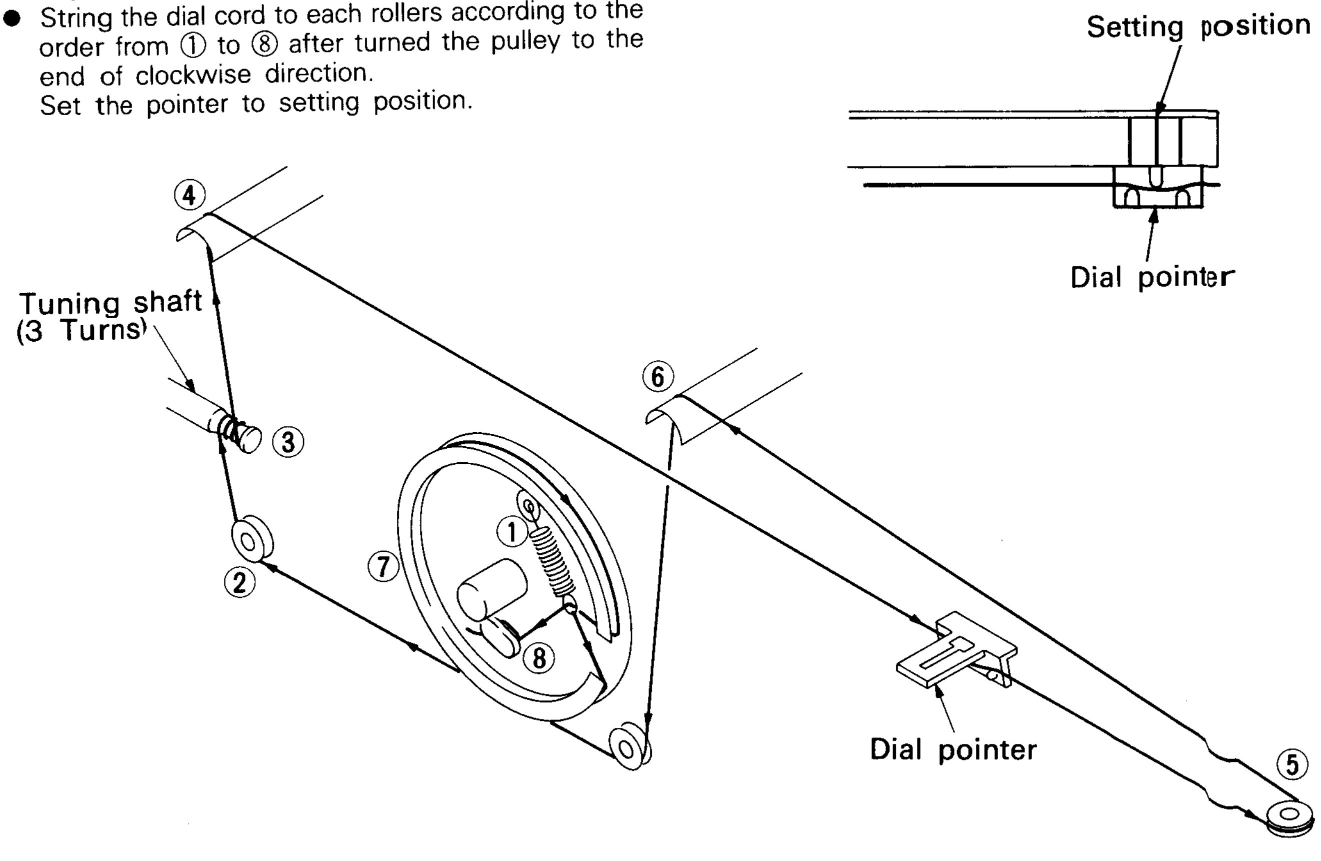
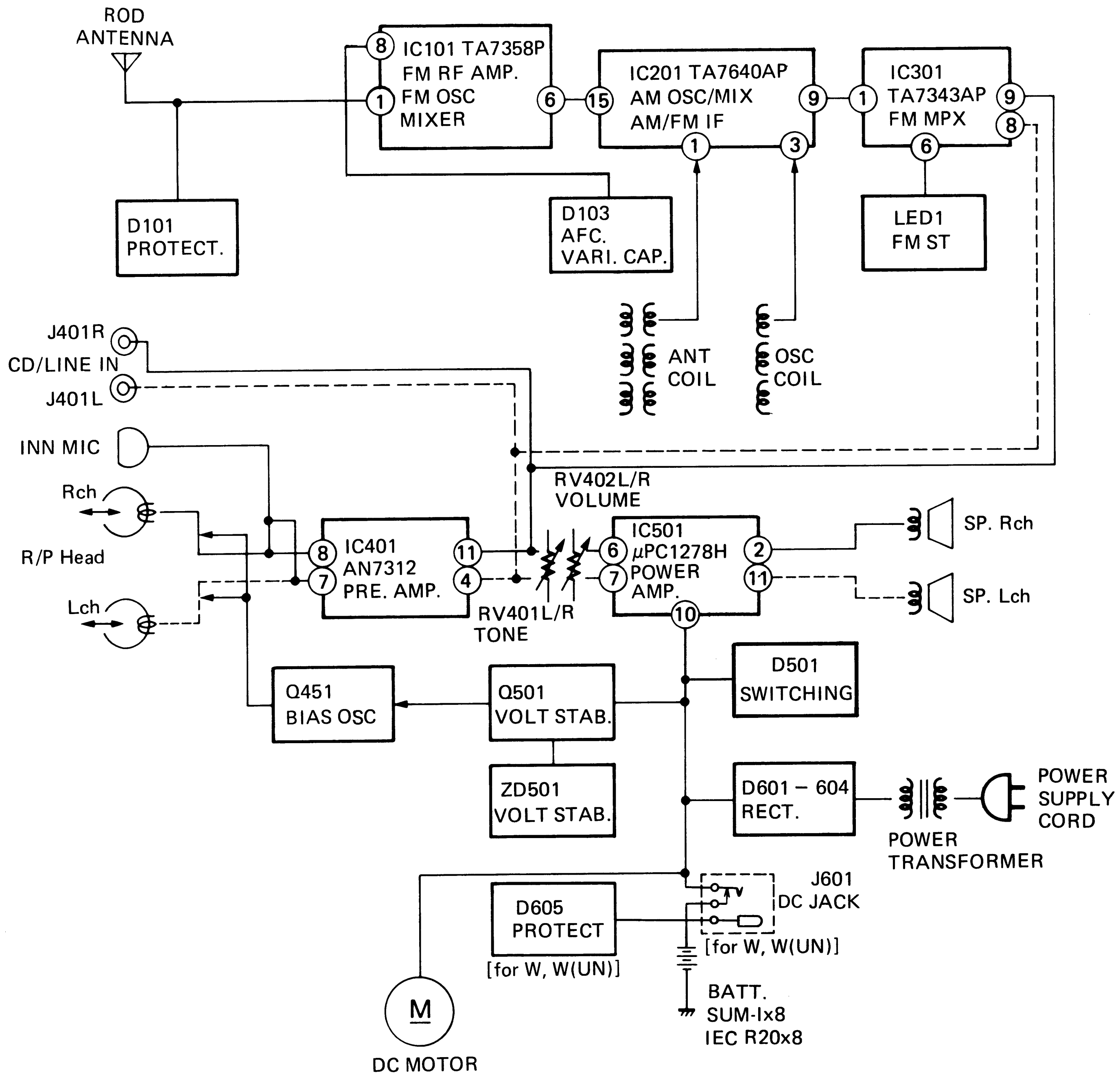
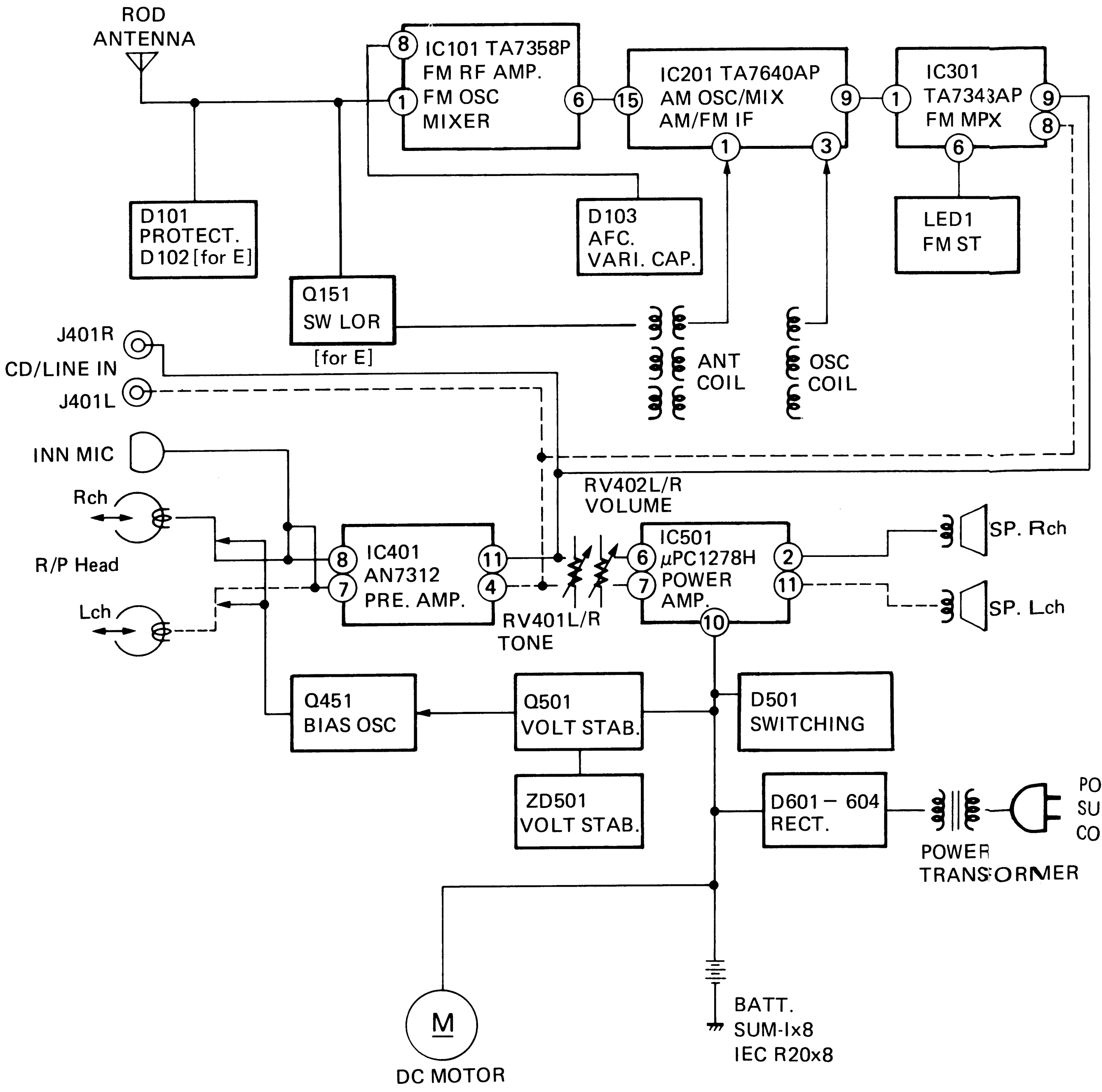

Setting position
Dial pointer
④
Tuning shaft
(3 Turns)
③
②
⑦
①
⑧
⑥
Dial pointer
⑤

Fig. 16

BLOCK DIAGRAM [for W, W(UN), AU]


ROD ANTENNA
IC101 TA7358P
FM RF AMP.
FM OSC
MIXER
IC201 TA7640AP
AM OSC/MIX
AM/FM IF
IC301
TA7343AP
FM MPX
D101
PROTECT.
D103
AFC.
VARI. CAP.
LED1
FM ST
ANT COIL
OSC COIL
J401R
CD/LINE IN
J401L
INN MIC
Rch
R/P Head
Lch
IC401
AN7312
PRE. AMP.
RV402L/R
VOLUME
RV401L/R
TONE
IC501
μPC1278H
POWER AMP.
SP. Rch
SP. Lch
Q451
BIAS OSC
Q501
VOLT STAB.
D501
SWITCHING
ZD501
VOLT STAB.
D601 – 604
RECT.
POWER TRANSFORMER
POWER SUPPLY CORD
J601
DC JACK
[for W, W(UN)]
D605
PROTECT
[for W, W(UN)]
BATT.
SUM-Ix8
IEC R20x8
M
DC MOTOR

BLOCK DIAGRAM [for E, E(BS)]


ROD ANTENNA
IC101 TA7358P
FM RF AMP.
FM OSC
MIXER
IC201 TA7640AP
AM OSC/MIX
AM/FM IF
IC301
TA7343AP
FM MPX
D101
PROTECT.
D102 [for E]
Q151
SW LOR
[for E]
D103
AFC.
VARI. CAP.
LED1
FM ST
ANT COIL
OSC COIL
J401R
CD/LINE IN
J401L
INN MIC
Rch
R/P Head
Lch
IC401
AN7312
PRE. AMP.
RV402L/R
VOLUME
RV401L/R
TONE
IC501
μPC1278H
POWER AMP.
SP. Rch
SP. Lch
Q451
BIAS OSC
Q501
VOLT STAB.
D501
SWITCHING
ZD501
VOLT STAB.
D601 – 604
RECT.
POWER TRANSFORMER
POWER SUPPLY CORD
BATT.
SUM-Ix8
IEC R20x8
M
DC MOTOR

PRINTED WIRING BOARD

IC101		
	FM	AM
1	0.7V	5.5V
2	1.5V	5.2V
3	4.1V	5.2V
4	1.4V	5.2V
5	0V	5.5V
6	4.1V	5.2V
7	3.3V	5.1V
8	4.0V	5.2V
9	4.1V	5.2V

IC201					
	FM	AM		FM	AM
1	0.7V	1.5V	9	1.4V	1.3V
2	0.7V	1.5V	10	4.8V	5.1V
3	1.8V	2.2V	11	4.8V	5.1V
4	2.3V	2.3V	12	1.4V	1.4V
5	0.8V	0.9V	13	1.4V	1.4V
6	0.8V	0.9V	14	1.4V	1.4V
7	0.7V	0.4V	15	1.4V	1.4V
8	0V	0V	16	4.8V	5.1V

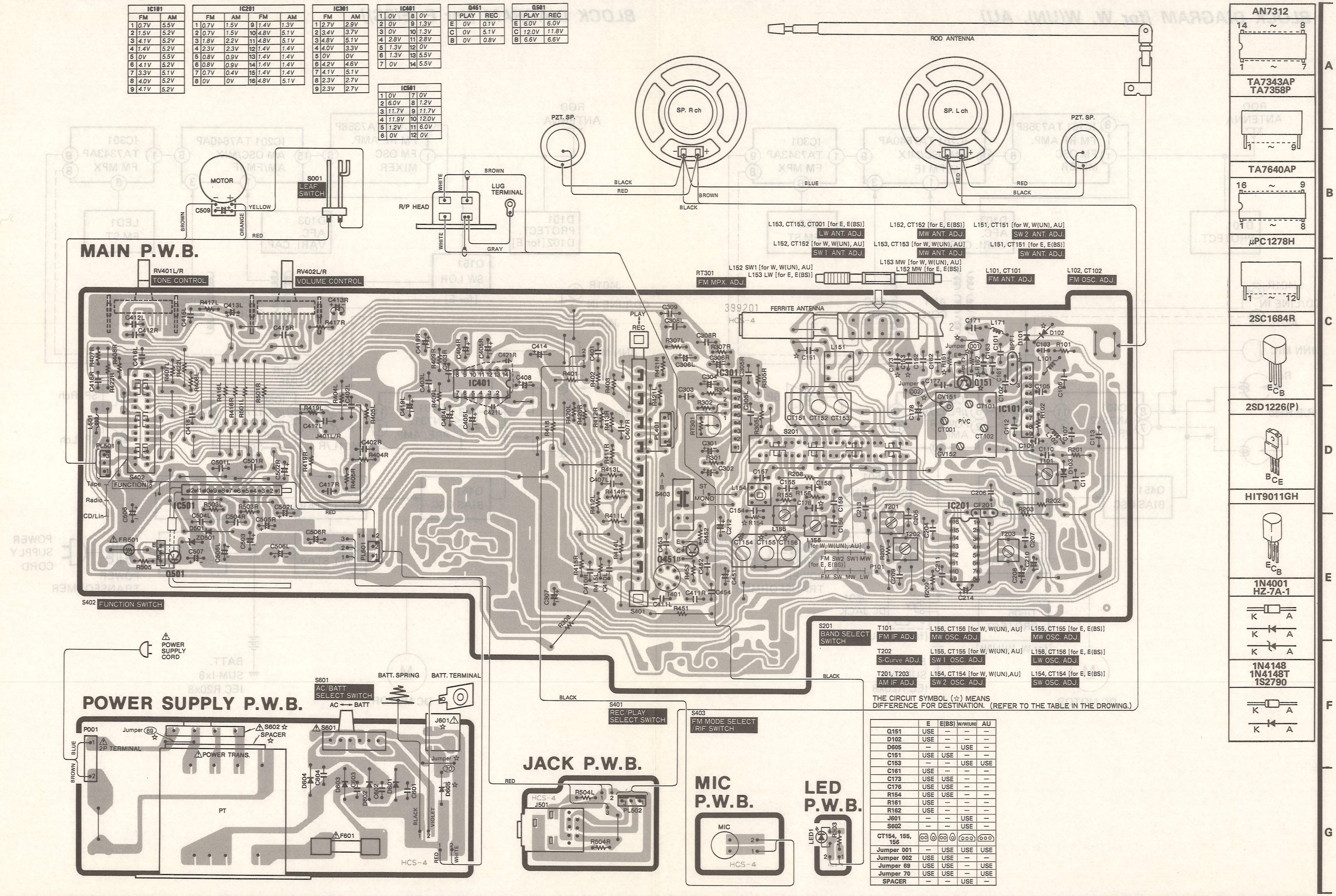
IC301		
	FM	AM
1	2.7V	2.9V
2	3.4V	3.7V
3	4.8V	5.1V
4	4.0V	3.3V
5	0V	0V
6	4.2V	4.6V
7	4.1V	5.1V
8	2.3V	2.7V
9	2.3V	2.7V

IC401			
1	0V	8	0V
2	0V	9	1.3V
3	0V	10	1.3V
4	2.8V	11	2.8V
5	1.3V	12	0V
6	1.3V	13	5.5V
7	0V	14	5.5V

Q451		
	PLAY	REC
E	0V	0.1V
C	0V	5.1V
B	0V	0.8V

Q501		
	PLAY	REC
E	6.0V	6.0V
C	12.0V	11.8V
B	6.6V	6.6V

IC501			
1	0V	7	0V
2	6.0V	8	1.2V
3	11.7V	9	11.7V
4	11.9V	10	12.0V
5	1.2V	11	6.0V
6	0V	12	0V


ROD ANTENNA
SP. R ch
SP. L ch
PZT. SP.
MOTOR
S001 LEAF SWITCH
R/P HEAD
LUG TERMINAL
MAIN P.W.B.
RV401L/R TONE CONTROL
RV402L/R VOLUME CONTROL
L153, CT153, CT001 [for E, E(BS)] LW ANT. ADJ.
L152, CT152 [for W, W(UN), AU] SW 1 ANT. ADJ.
L152, CT152 [for E, E(BS)] MW ANT. ADJ.
L153, CT153 [for W, W(UN), AU] MW ANT. ADJ.
L151, CT151 [for W, W(UN), AU] SW 2 ANT. ADJ.
L151, CT151 [for E, E(BS)] SW ANT. ADJ.
RT301 FM MPX. ADJ.
L152 SW1 [for W, W(UN), AU]
L153 LW [for E, E(BS)]
L153 MW [for W, W(UN), AU]
L152 MW [for E, E(BS)]
L101, CT101 FM ANT. ADJ.
L102, CT102 FM OSC. ADJ.
FERRITE ANTENNA
IC101
IC201
IC301
IC401
IC501
Q151
Q451
Q501
S201
S401
S402
S403
PL401
PL501
PL601
FR501
Tape
Radio
CD/Lin
FUNCTION
S402 FUNCTION SWITCH
S201 BAND SELECT SWITCH
T101 FM IF ADJ.
T202 S-Curve ADJ.
T201, T203 AM IF ADJ.
L156, CT156 [for W, W(UN), AU] MW OSC. ADJ.
L155, CT155 [for W, W(UN), AU] SW 1 OSC. ADJ.
L154, CT154 [for W, W(UN),AU] SW 2 OSC. ADJ.
L155, CT155 [for E, E(BS)] MW OSC. ADJ.
L156, CT156 [for E, E(BS)] LW OSC. ADJ.
L154, CT154 [for E, E(BS)] SW OSC. ADJ.
POWER SUPPLY CORD
POWER SUPPLY P.W.B.
S601 AC/BATT SELECT SWITCH
AC ←→ BATT
BATT. SPRING
BATT. TERMINAL
P001
2P TERMINAL
Jumper 69
S602
SPACER
POWER TRANS.
PT
J601
Jumper 70
F601
S401 REC/PLAY SELECT SWITCH
S403 FM MODE SELECT /RIF SWITCH
JACK P.W.B.
J501
PL502
MIC P.W.B.
MIC
LED P.W.B.
LED1
AN7312
TA7343AP
TA7358P
TA7640AP
µPC1278H
2SC1684R
2SD1226(P)
HIT9011GH
1N4001
HZ-7A-1
1N4148
1N4148T
1S2790
A
B
C
D
E
F
G
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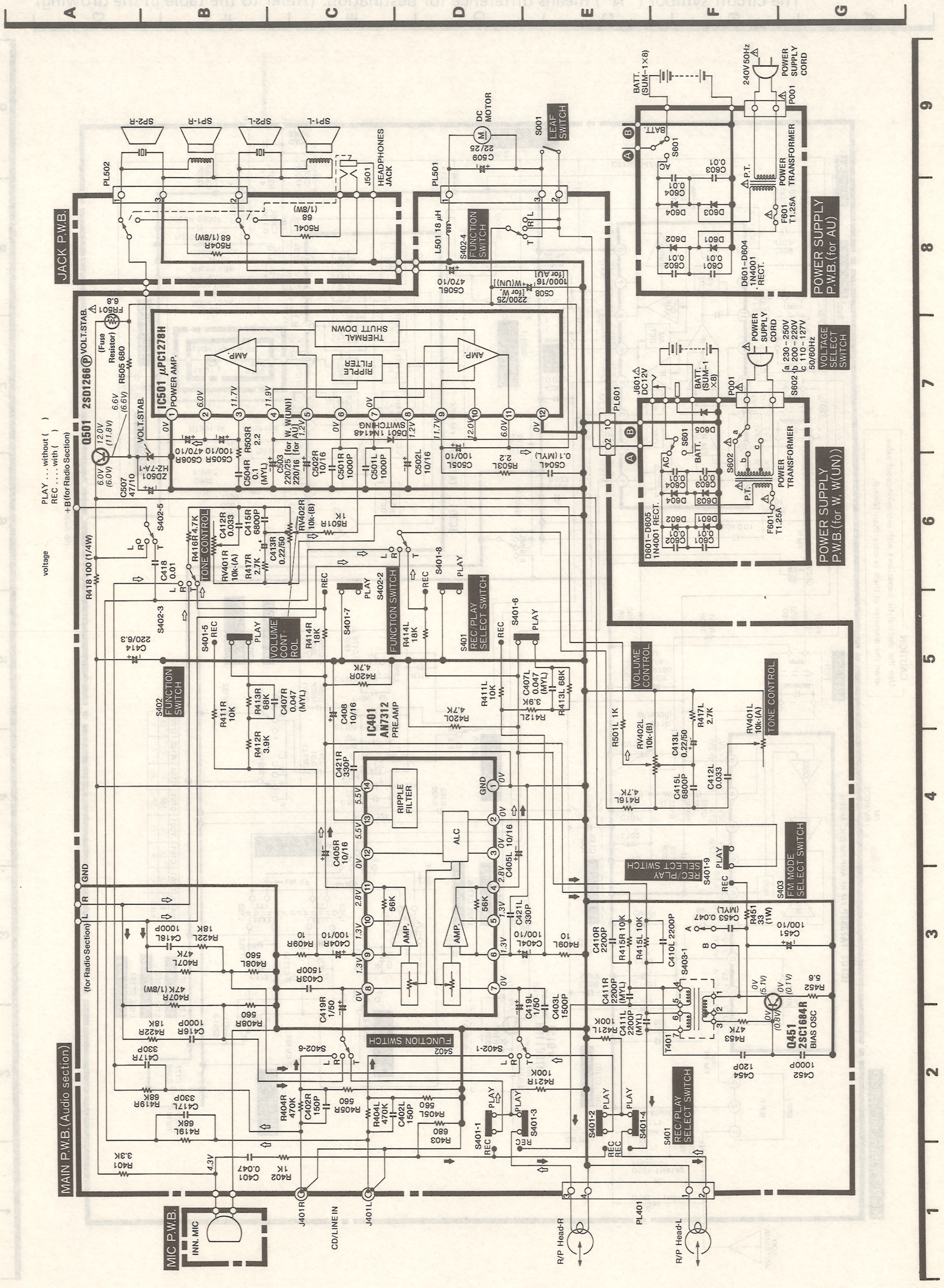
9

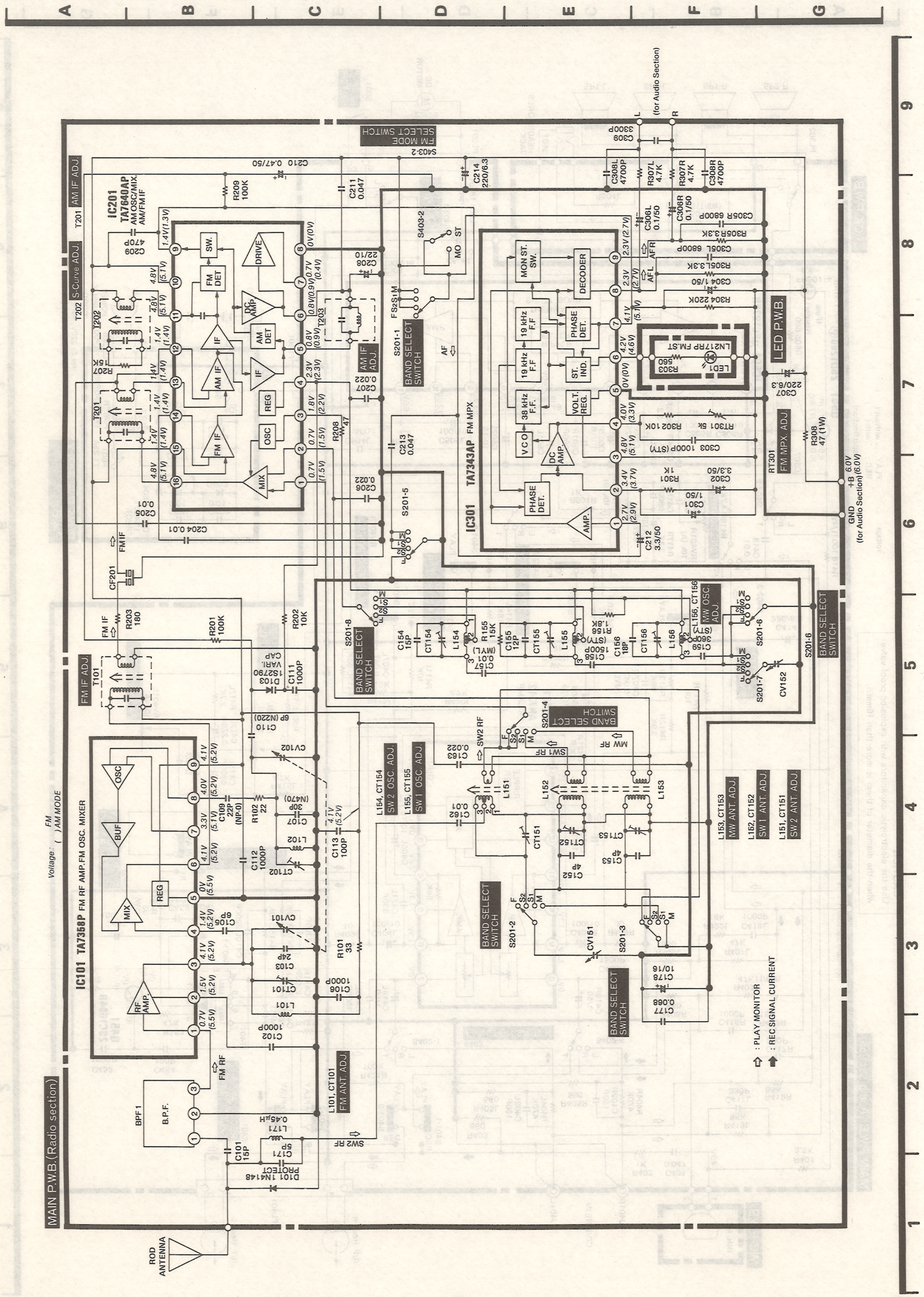
THE CIRCUIT SYMBOL (☆) MEANS DIFFERENCE FOR DESTINATION. (REFER TO THE TABLE IN THE DROWING.)

	E	E(BS)	W/W(UN)	AU
Q151	USE	—	—	—
D102	USE	—	—	—
D605	—	—	USE	—
C151	USE	USE	—	—
C153	—	—	USE	USE
C161	USE	—	—	—
C173	USE	USE	—	—
C176	USE	USE	—	—
R154	USE	USE	—	—
R161	USE	—	—	—
R162	USE	—	—	—
J601	—	—	USE	—
S602	—	—	USE	—
CT154, 155, 156	○○ ○	○○ ○	○○○	○○○
Jumper 001	—	USE	USE	USE
Jumper 002	USE	USE	—	—
Jumper 69	USE	USE	—	USE
Jumper 70	USE	USE	—	USE
SPACER	—	—	USE	—

CIRCUIT DIAGRAM [for W, W(UN), AU]


A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
JACK P.W.B.
MAIN P.W.B. (Audio section)
MIC P.W.B.
INN. MIC
CD/LINE IN
J401R
J401L
PL401
R/P Head-R
R/P Head-L
POWER SUPPLY P.W.B. (for AU)
POWER SUPPLY P.W.B. (for W, W(UN))
POWER TRANSFORMER
POWER SUPPLY CORD
240V 50Hz
BATT. (SUM-1×8)
BATT. (SUM-1 ×8)
D601~D604 1N4001 RECT.
D601~D605 1N4001 RECT.
F601 T1.25A
S601
S602
VOLTAGE SELECT SWITCH
a 230~250V
b 200~220V
c 110~127V
50/60Hz
PL601 DC12V
DC MOTOR
S001 LEAF SWITCH
PL501
PL502
J501 HEADPHONES JACK
SP1-L
SP2-L
SP1-R
SP2-R
L501 18 μH
S402-4 FUNCTION SWITCH
IC501 μPC1278H POWER AMP.
THERMAL SHUT DOWN
RIPPLE FILTER
AMP.
Q501 2SD1266(P) VOLT.STAB.
ZD501 HZ-7A-1 VOLT.STAB.
RF501 6.8 (Fuse Resistor)
R505 680
D501 1N4148 SWITCHING
IC401 AN7312 PRE.AMP
RIPPLE FILTER
ALC
AMP.
Q451 2SC1684R BIAS OSC
T401
TONE CONTROL
VOLUME CONTROL
S401 REC/PLAY SELECT SWITCH
S402 FUNCTION SWITCH
S403 FM MODE SELECT SWITCH
REC/PLAY SELECT SWITCH
PLAY ... without ( )
REC .... with ( )
+B (for Radio Section)
L R GND (for Radio Section)
voltage

CIRCUIT DIAGRAM [for W, W(UN), AU]


A
B
C
D
E
F
G
1
2
3
4
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6
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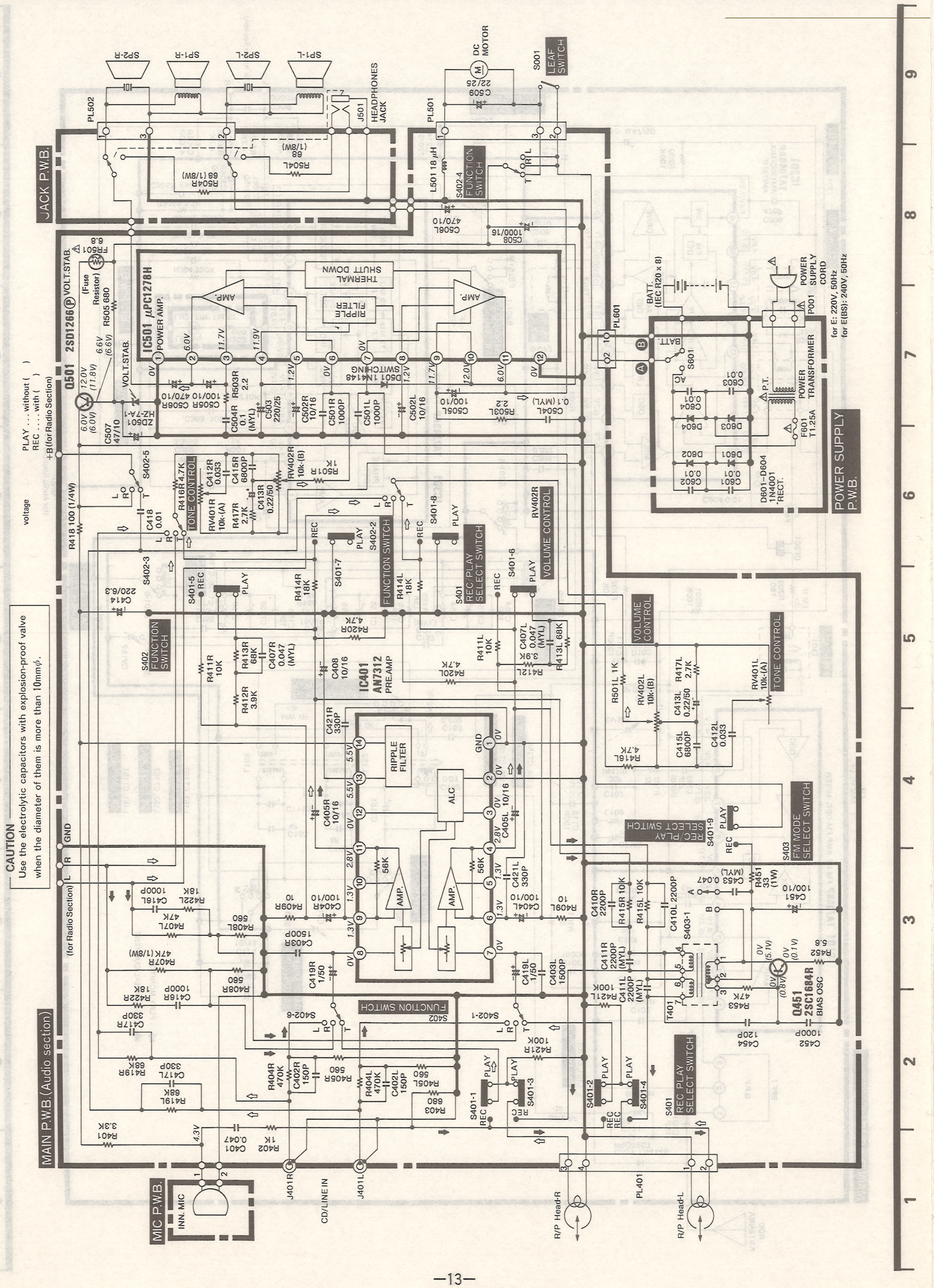
8
9
MAIN P.W.B. (Radio section)
ROD ANTENNA
BPF 1 B.P.F.
D101 1N4148 PROTECT
SW2 RF
L101, CT101 FM ANT ADJ
IC101 TA7358P FM RF AMP, FM OSC, MIXER
RF AMP
MIX
REG
BUF
OSC
Voltage: FM ( ) AM MODE
FM IF ADJ.
T101
CF201 FMIF
IC201 TA7640AP AM OSC/MIX AM/FM IF
FM IF
AM IF
IF
FM DET
AM DET
SW.
DRIVE
DC AMP
MIX
OSC
REG
T201 AM IF ADJ.
T202 S-Curve ADJ.
T203 AM IF ADJ.
IC301 TA7343AP FM MPX
PHASE DET.
VCO
38 kHz F.F.
19 kHz F.F.
DC AMP
VOLT. REG.
ST. IND.
PHASE DET.
MONO ST. SW.
DECODER
AMP.
LED P.W.B.
LED1 LN217RP FM ST.
RT301 FM MPX ADJ.
S403-2 FM MODE SELECT SWITCH
S201 BAND SELECT SWITCH
L154, CT154 SW 2 OSC ADJ.
L155, CT155 SW 1 OSC ADJ.
L153, CT153 MW ANT ADJ.
L152, CT152 SW 1 ANT ADJ.
L151, CT151 SW 2 ANT ADJ.
L156, CT156 MW OSC ADJ.
CV151
CV152
+B 6.0V (for Audio Section) (6.0V)
GND (for Audio Section)
L R (for Audio Section)
⇦ : PLAY MONITOR
⬅ : REC SIGNAL CURRENT

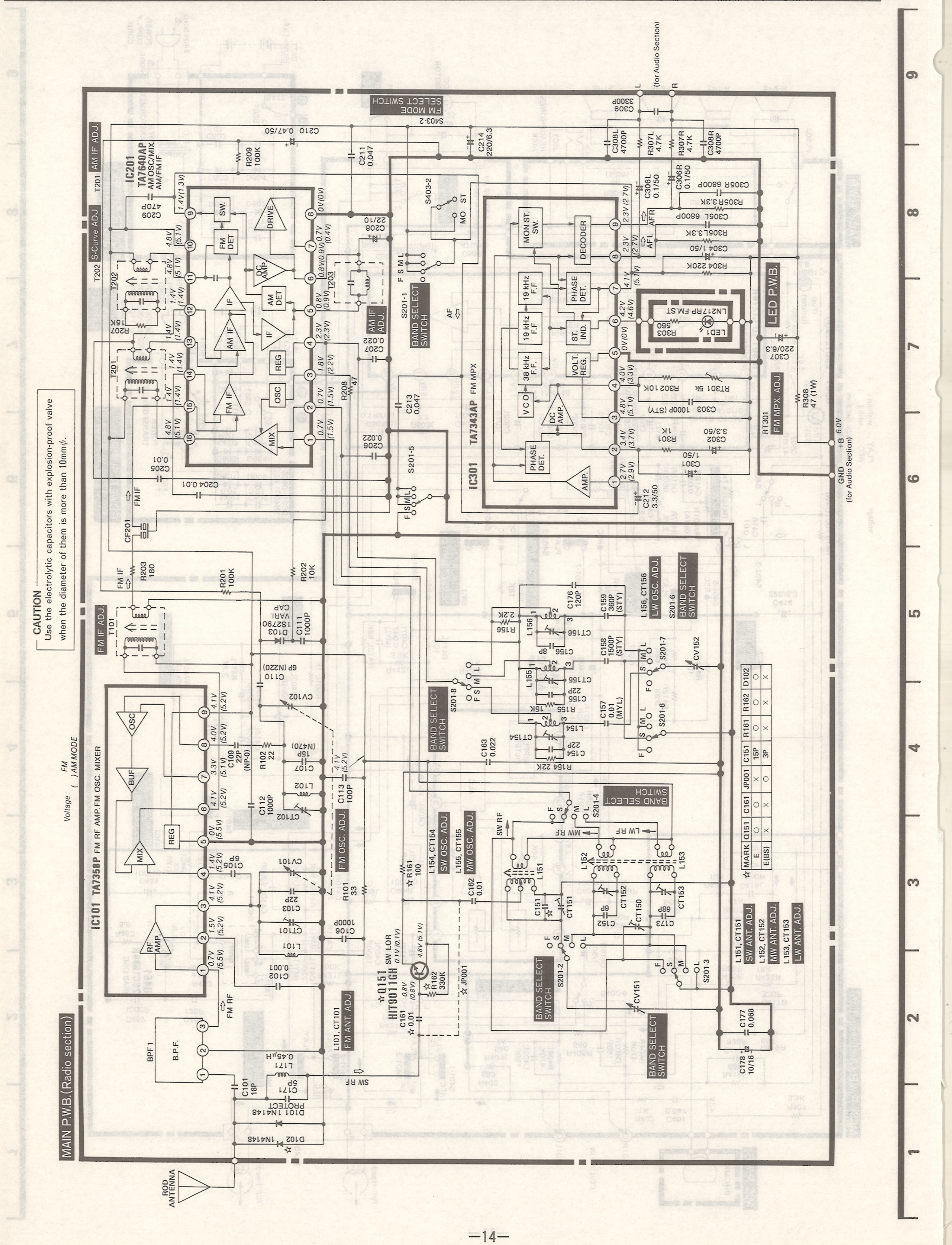
CIRCUIT DIAGRAM [for E, E(BS)]


JACK P.W.B.
SP2-R
SP1-R
SP2-L
SP1-L
HEADPHONES JACK
DC MOTOR
LEAF SWITCH
FUNCTION SWITCH
IC501 μPC1278H POWER AMP.
Q501 2SD1266 VOLT.STAB.
RIPPLE FILTER
THERMAL SHUT DOWN
AMP.
POWER SUPPLY P.W.B.
POWER TRANSFORMER
POWER SUPPLY CORD
for E: 220V, 50Hz
for E(BS): 240V, 50Hz
BATT. (IEC R20 × 8)
TONE CONTROL
VOLUME CONTROL
REC/PLAY SELECT SWITCH
IC401 AN7312 PRE AMP
ALC
FM MODE SELECT SWITCH
Q451 2SC1684R BIAS OSC
MAIN P.W.B. (Audio section)
MIC P.W.B.
INN. MIC
CD/LINE IN
R/P Head-R
R/P Head-L
PLAY ... without ( )
REC ... with ( )
voltage
+B (for Radio Section)

CAUTION
Use the electrolytic capacitors with explosion-proof valve when the diameter of them is more than 10mmϕ.

CIRCUIT DIAGRAM [for E, E(BS)]

The circuit symbol (☆) means difference for destination. (Refer to the table in the drowing)

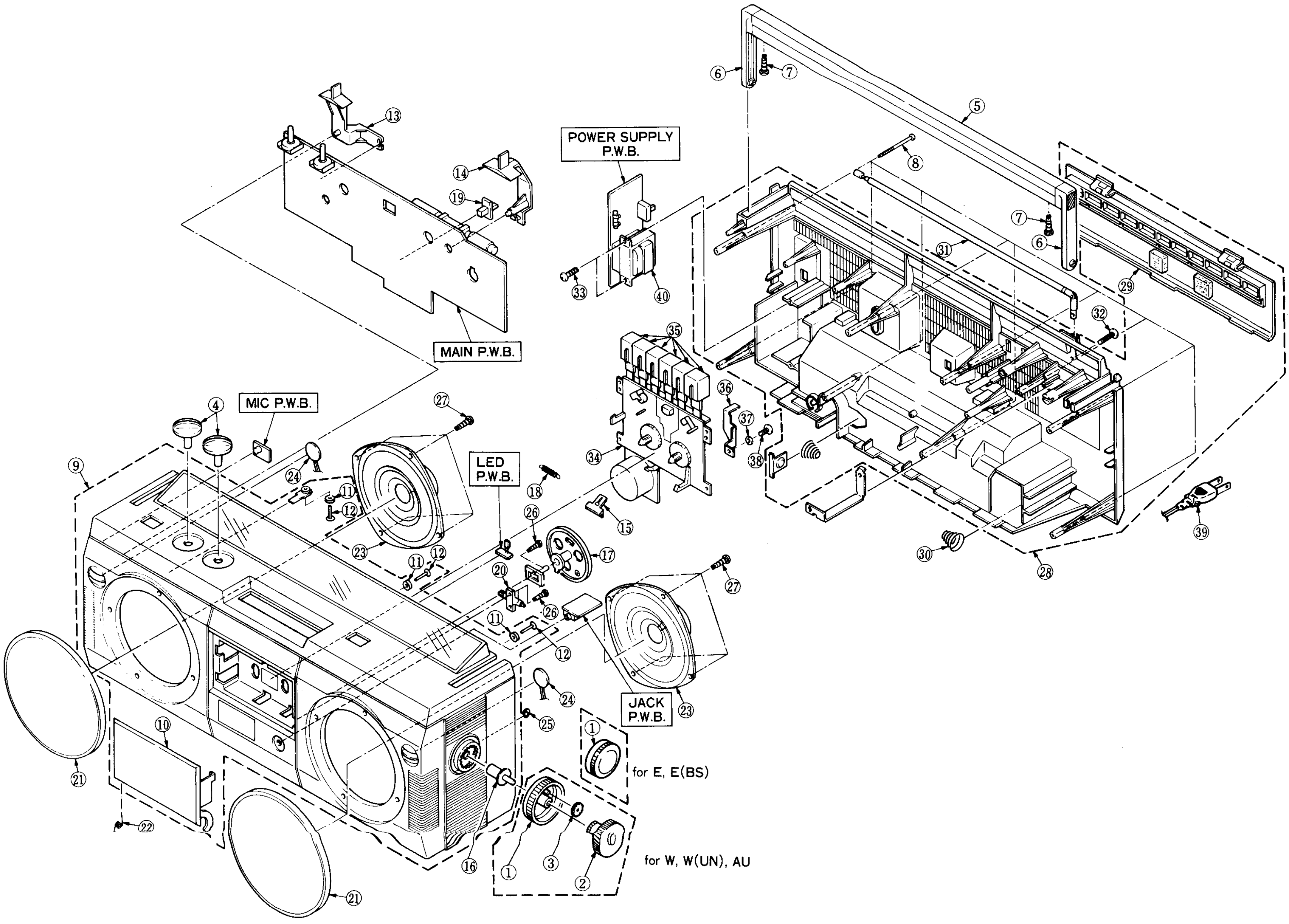

IC201 TA7640AP AM OSC/MIX AM/FM IF
AM IF ADJ.
S-Curve ADJ.
FM MODE SELECT SWITCH
IC301 TA7343AP FM MPX
FM MPX ADJ.
LED P.W.B.
LED1 LN217RP FM.ST
(for Audio Section)
FM IF ADJ.
IC101 TA7358P FM RF AMP, FM OSC, MIXER
FM OSC. ADJ.
FM ANT. ADJ.
BAND SELECT SWITCH
LW OSC. ADJ.
SW OSC. ADJ.
MW OSC. ADJ.
Q151 HIT9011GH SW LOR
L151, CT151 SW ANT. ADJ.
L152, CT152 MW ANT. ADJ.
L153, CT153 LW ANT. ADJ.
ROD ANTENNA
MAIN P.W.B. (Radio section)
Voltage FM ( ) AM MODE
GND (for Audio Section)

☆ MARK	Q151	C161	JP001	C151	R161	R162	D102
E	○	○	X	15P	○	○	○
E(BS)	X	X	○	3P	X	X	X

CAUTION
Use the electrolytic capacitors with explosion-proof valve when the diameter of them is more than 10mmϕ.

EXPLODED VIEW (Cabinet)

● Nos. are reference Nos. of parts list.



POWER SUPPLY P.W.B.
MAIN P.W.B.
MIC P.W.B.
LED P.W.B.
JACK P.W.B.
for E, E(BS)
for W, W(UN), AU
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳
㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲ ㊳ ㊴ ㊵
A
B
C
D
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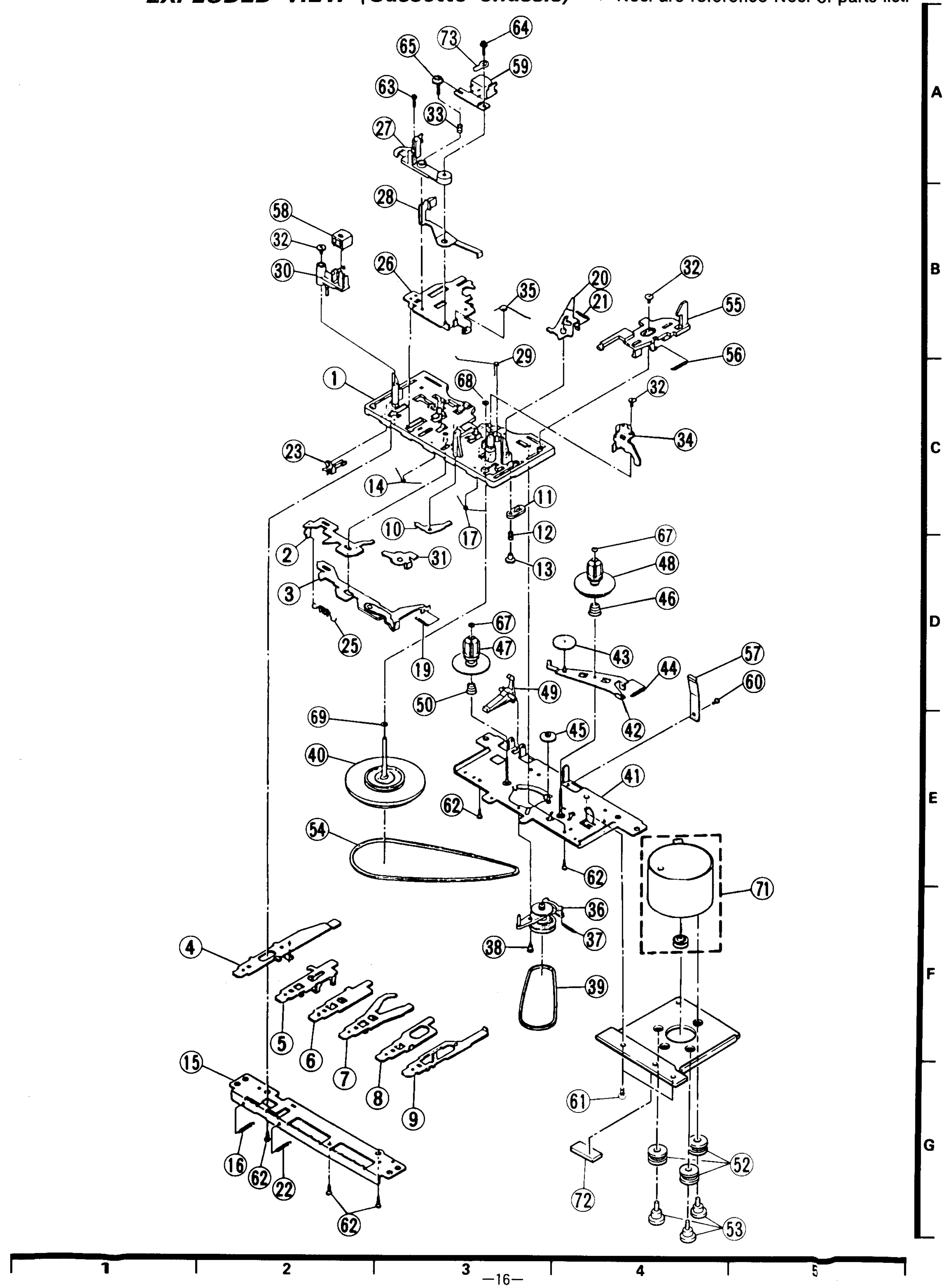
EXPLODED VIEW (Cassette chassis)

● Nos. are reference Nos. of parts list.


64
73
65
59
63
33
27
28
58
32
30
26
35
20
21
32
55
56
29
1
68
32
34
23
14
11
10
17
12
2
31
13
67
48
3
46
25
19
67
47
43
44
57
60
50
49
42
45
69
40
41
62
54
62
71
36
37
38
39
4
5
6
7
8
9
15
61
52
16
62
22
72
53
62
A
B
C
D
E
F
G
1
2
3
4
5

CD : Ceramic discal
EL : Electrolytic
MF : Mylar film
ST : Styrol
CF : Carbon film
MO : Metal oxide
FR : Fuse resister

REPLACEMENT PARTS LIST

CAPACITORS

SYMBOL No.	PART No.	DESCRIPTION
C101	0208664	CD 15PF ±5% 50V [for W, W(UN), AU]
	0208666	CD 18PF ±5% 50V [for E, E(BS)]
C102	02441012	CD 1000PF ±10% 50V
C103	0248669	CD 24PF ±0.5% 50V [for W, W(UN), AU]
	02486682	CD 22PF ±0.5% 50V [for E, E(BS)]
C105	02486462	CD 6PF ±0.5PF 50V
C106	02441012	CD 1000PF ±10% 50V
C107	0248341	CD 30PF ±5% 50V [for W, W(UN), AU]
	0248334	CD 15PF ±5% 50V [for E, E(BS)]
C109	02464482	CD 22PF ±0.5% 50V
C110	0248016	CD 6PF ±0.5PF 50V
C111	02097312	CD 1000PF ±10% 50V
C112	02441012	CD 1000PF ±10% 50V
C113	02086842	CD 100PF ±5% 50V
C151	0208664	CD 15PF ±5% 50V [for E]
	0208633	CD 3PF ±0.25PF 50V [for E(BS)]
C152	0208634	CD 4PF ±0.25PF 50V [for W, W(UN), AU]
	0208646	CD 6PF ±0.5PF 50V [for E, E(BS)]
C153	0208634	CD 4PF ±0.25PF 50V [for W, W(UN), AU]
C154	0208664	CD 15PF ±5% 50V [for W, W(UN), AU]
	02086682	CD 22PF ±5% 50V [for E, E(BS)]
C155	0208662	CD 12PF ±5% 50V [for W, W(UN), AU]
	02086682	CD 22PF ±5% 50V [for E, E(BS)]
C156	0208666	CD 18PF ±0.5PF 50V [for W, W(UN), AU]
	0208648	CD 8PF ±0.5PF 50V [for E, E(BS)]
C157	02750112	MF 0.01μF ±10% 50V
C158	1221396	ST 1500PF ±5% 50V
C159	1221393	ST 360PF ±5% 50V
C161	02441712	CD 0.01μF $^{+80}_{-20}$% 50V [for E]
C162	02441712	CD 0.01μF $^{+80}_{-20}$% 50V
C163	02441732	CD 0.022μF $^{+80}_{-20}$% 50V
C171	02486352	CD 5PF ±0.25PF 50V
C173	0208680	CD 68PF ±5% 50V [for E, E (BS)]
C176	0208686	CD 120PF ±5% 50V [for E, E (BS)]
C177	02497662	CD 0.068μF ±20% 25V
C178	0252521	EL 10μF ±20% 16V
C204	02441712	CD 0.01μF $^{+80}_{-20}$% 50V
C205	02441712	CD 0.01μF $^{+80}_{-20}$% 50V
C206	02441732	CD 0.022μF $^{+80}_{-20}$% 50V
C207	02441732	CD 0.022μF $^{+80}_{-20}$% 50V
C208	02523222	EL 22μF ±20% 10V
C209	02097232	CD 470PF ±10% 50V
C210	02528052	EL 0.47μF ±20% 50V
C211	02091752	CD 0.047μF $^{+80}_{-20}$% 50V
C212	02528132	EL 3.3μF ±20% 50V
C213	02091752	CD 0.047μF $^{+80}_{-20}$% 50V
C214	02522322	EL 220μF ±20% 6.3V
C301	02528112	EL 1μF ±20% 50V
C302	02528132	EL 3.3μF ±20% 50V
C303	1221395	ST 1000PF ±5% 50V
C304	02528112	EL 1μF ±20% 50V
C305LR	0209736	CD 6800PF ±10% 50V
C306LR	0252801	EL 0.1μF ±20% 50V
C307	02522322	EL 220μF ±20% 6.3V
C308L	02097352	CD 4700PF ±10% 50V [for W, W (UN), AU]
C308R	02441092	CD 4700PF ±10% 50V [for W, W (UN), AU]
C308LR	02097352	CD 4700PF ±10% 50V [for E, E (BS)]
C309	02441072	CD 3300PF ±10% 50V
C401	02441752	CD 0.047μF $^{+80}_{-20}$% 50V
C402LR	02086882	CD 150PF ±5% 50V
C403LR	02097322	CD 1500PF ±10% 50V
C404LR	02523312	EL 100μF ±20% 10V
C405LR	0252521	EL 10μF ±20% 16V
C407LR	02750152	MF 0.047μF ±10% 50V
C408	0252521	EL 10μF ±20% 16V
C410LR	02097332	CD 2200PF ±10% 50V
C411LR	02740132	MF 2200PF ±10% 50V
C412LR	02497642	CD 0.033μF ±20% 50V
C413LR	0252802	EL 0.22μF ±20% 50V
C414	02522322	EL 220μF ±20% 6.3V
C415L	02441112	CD 6800PF ±10% 50V
C415R	02097362	CD 6800PF ±10% 50V
C416LR	02441012	CD 1000PF ±10% 50V
C417LR	02486962	CD 330PF ±5% 50V [for W, W (UN), AU]
C417L	02486962	CD 330PF ±5% 50V [for E, E (BS)]
C417R	0209721	CD 330PF ±10% 50V [for E, E (BS)]
C418	02441712	CD 0.01μF $^{+80}_{-20}$% 50V
C419LR	02528112	EL 1μF ±20% 50V
C421LR	02486962	CD 330PF ±5% 50V
C451	02523312	EL 100μF ±20% 10V
C452	02097312	CD 1000PF ±10% 50V
C453	02750152	MF 0.047μF ±10% 50V
C454	02486862	CD 120PF ±5% 50V
C501LR	02097312	CD 1000PF ±10% 50V
C502LR	0252521	EL 10μF ±20% 16V
C503	0252532	EL 220μf ±20% 16V [for AU]
	02526322	EL 220μF ±20% 25V [for W, W (UN), E, E (BS)]
C504LR	02760112	MF 0.1μF ±10% 50V
C505LR	02523312	EL 100μF ±20% 10V
C506LR	02523352	EL 470μF ±20% 10V
C507	02523252	EL 47μF ±20% 10V
C508	0252541	EL 1000μF ±20% 16V [for AU, E, E (BS)]
C508	0252642	EL 2200μF ±20% 25V [for W, W (UN)]
C509	02526222	EL 22μF ±20% 25V
C601	02441712	CD 0.01μF $^{+80}_{-20}$% 50V
C602	02441712	CD 0.01μF $^{+80}_{-20}$% 50V
C603	02441712	CD 0.01μF $^{+80}_{-20}$% 50V
C604	02441712	CD 0.01μF $^{+80}_{-20}$% 50V

RESISTORS

SYMBOL No.	PART No.	DESCRIPTION
R101	01703342	CF 33Ω ±5% SRD1/8P
R102	0113575	CF 22Ω ±5% SRD1/6P
R154	0113647	CF 22KΩ ±5% SRD1/6P [for E, E (BS)]
R155	0113643	CF 15KΩ ±5% SRD1/6P
R156	0113621	CF 1.8KΩ ±5% SRD1/6P [for W, W (UN), AU]
	0113623	CF 2.2KΩ ±5% SRD1/6P [for E, E (BS)]
R161	0113591	CF 100Ω ±5% SRD1/6P [for E]
R162	0113675	CF 330KΩ ±5% SRD1/6P [for E]
R201	0113663	CF 100KΩ ±5% SRD1/6P
R202	0113639	CF 10KΩ ±5% SRD1/6P
R203	0113597	CF 180Ω ±5% SRD1/6P
R207	0113643	CF 15KΩ ±5% SRD1/6P
R208	0113583	CF 47Ω ±5% SRD1/6P
R209	0113663	CF 100KΩ ±5% SRD1/6P
R301	0113615	CF 1KΩ ±5% SRD1/6P
R302	0113639	CF 10KΩ ±5% SRD1/6P
R303	01703492	CF 560Ω ±5% SRD1/8P
R304	0113671	CF 220KΩ ±5% SRD1/6P
R305LR	0113627	CF 3.3KΩ ±5% SRD1/6P
R307LR	0113631	CF 4.7KΩ ±5% SRD1/6P
R308	01129122	MO 47Ω ±10% RS1B
R401	0113627	CF 3.3KΩ ±5% SRD1/6P
R402	0113615	CF 1KΩ ±5% SRD1/6P
R403	0113611	CF 680Ω ±5% SRD1/6P
R404LR	0113679	CF 470KΩ ±5% SRD1/6P
R405LR	0113609	CF 560Ω ±5% SRD1/6P
R407L	0113655	CF 47KΩ ±5% SRD1/6P
R407R	01703722	CF 47KΩ ±5% SRD1/8P
R408LR	0113609	CF 560Ω ±5% SRD1/6P
R409LR	0113567	CF 10Ω ±5% SRD1/6P
R411LR	0113639	CF 10KΩ ±5% SRD1/6P
R412LR	0113629	CF 3.9KΩ ±5% SRD1/6P
R413LR	0113659	CF 68KΩ ±5% SRD1/6P
R414LR	0113645	CF 18KΩ ±5% SRD1/6P
R415LR	0113639	CF 10KΩ ±5% SRD1/6P
R416LR	0113631	CF 4.7KΩ ±5% SRD1/6P
R417LR	0113625	CF 2.7KΩ ±5% SRD1/6P
R418	0129561	CF 100Ω ±5% SRD1/4P
R419LR	0113659	CF 68KΩ ±5% SRD1/6P
R420LR	0113631	CF 4.7KΩ ±5% SRD1/6P
R421LR	0113663	CF 100KΩ ±5% SRD1/6P
R422LR	0113645	CF 18KΩ ±5% SRD1/6P
R451	0112915	MO 33Ω ±10% RS1B
R452	0113561	CF 5.6Ω ±5% SRD1/6P
R453	0113655	CF 47KΩ ±5% SRD1/6P
⚠FR501	1118447	FR 6.8Ω ±5% RN1/4B
R501LR	0113615	CF 1KΩ ±5% SRD1/6P
R503LR	0113551	CF 2.2Ω ±5% SRD1/6P

SYMBOL No.	PART No.	DESCRIPTION
R504LR	01703382	CF 68Ω ±5% SRD1/8P
R505	0113611	CF 680Ω ±5% SRD1/6P

ICs & TRANSISTORS

SYMBOL No.	PART No.	DESCRIPTION
IC101	2398201	TA7358P
IC201	2389511	TA7640AP
IC301	2301041	TA7343AP
IC401	2300881	AN7312
IC501	2389521	μPC1278H
Q151	2319083	HIT9011GH [for E]
Q451	2319101	2SC1684R
Q501	2317803	2SD1266(P)

DIODES

SYMBOL No.	PART No.	DESCRIPTION
D101	2398082	IN4148T
D102	2398081	IN4148 [for E]
D103	2338031	1S2790
D501	2398081	IN4148
D601	2398062	IN4001
D602	2398062	IN4001
D603	2398062	IN4001
D604	2398062	IN4001
D605	2398062	IN4001 [for W, W (UN)]
ZD501	2337541	HZ-7A-1
LED1	2397753	LN217RP

VARIABLE RESISTORS

SYMBOL No.	PART No.	DESCRIPTION
RT301	0189331	5kΩ (FM MPX ADJ.)
RV401LR	0166932	10kΩ-(A) (TONE CONTROL)
RV402LR	0166944	10kΩ-(B) (VOLUME CONTROL)

COILS&TRANSFORMERS

SYMBOL No.	PART No.	DESCRIPTION
L101	2137683	FM RF coil
L102	2137687	Choke coil
L151	2137662	SW ANT coil [for E, E (BS)]
	2137821	SW ANT coil [for W, W (UN), AU]
	2757994	Ferrite antenna (L152, L153) [for E, E (BS)]
	2757982	Ferrite antenna (L152, L153) [for W, W (UN), AU]
L154	2137671	SW OSC coil [for E, E (BS)]
	2137672	SW OSC coil [for W, W (UN), AU]
L155	2137631	MW OSC coil [for E, E (BS)]
	2137633	SW OSC coil [for W, W (UN), AU]
L156	2137642	LW OSC coil [for E, E (BS)]
	2137631	MW OSC coil [for W, W (UN), AU]
L171	2137684	Choke coil
L501	2227748	Choke coil
T101	2135651	FM IF transformer
T201	2154952	AM IF transformer
T202	2154964	FM IF transformer
T203	2154951	AM IF transformer
T401	2136891	REC OSC transformer

MISCELLANEOUS

SYMBOL No.	PART No.	DESCRIPTION
J401LR	2678781	2P pin jack
J501	2678234	Headphones jack
⚠J601	2678282	DC jack [for W, W (UN)]
⚠P001	2689461	2P terminal
PVC	0282182	Capacitor variable (CT101, CT102, CT150, CV101, CV102, CV151, CV152)
CT151-153	0283130	Capacitor semi variable
CT154-156	0283130	Capacitor semi variable [for W, W (UN), AU]
CT154, 155	0283557	Capacitor semi variable [for E, E (BS)]
CT156	0282148	Capacitor semi variable [for E, E (BS)]
BPF1	2137191	FM band pass filter
CF201	2135321	Ceramic filter
S201	2629282	Slide switch (BAND SELECT)
S401	2629293	Slide switch (REC/PLAY SELECT)
S402	2628581	Slide switch (FUNCTION)
S403	2629331	Slide switch (FM MODE SELECT)
⚠S601	2629261	Slide switch (AC/BATT. SELECT)
⚠S602	2618472	Switch (VOLTAGE SELECT) [for W, W (UN)]
⚠F601	2728073	Fuse T1.25A
	2737441	Mic.
	8691406	BT bind head screw (3 ϕ x 6) (IC 501)
	86914082	BT bind head screw (3 ϕ x 8) (Q 501)

CABINET

SYMBOL No.	PART No.	DESCRIPTION
1	3303331	Tuning knob (BLACK) [for W, W(UN), AU]
	3303333	Tuning knob (SILVER) [for W, W(UN), AU]
	3303183	Tuning knob (BLACK) [for E, E(BS)]
2	3303091	Fine knob (BLACK) [for W, W(UN), AU]
	3303094	Fine knob (SILVER) [for W, W(UN), AU]
3	3348613	Gear [for W, W(UN), AU]
4	3801491	28 ϕ knob (BLACK) [for W, W(UN), AU, E, E(BS)]
	3801493	28 ϕ knob (SILVER) [for W, W(UN), AU]
5	3801771	Handle
6	3801461	Handle arm
7	4577832	BT flat head screw (3 ϕ x 10) (handle)
8	4577818	Bind tapping screw (3 ϕ x 50) (rear case)
9	4042921	Front case assy (BLACK) [for W, W(UN), AU]
	4042922	Front case assy (SILVER) [for W, W(UN), AU]
	4042923	Front case assy (BLACK) [for E, E(BS)]
10	3801582	Cassette lid
11	3934271	Roller
12	4577661	Roller pin
13	3801531	Function lever (BLACK) [for W, W(UN), AU, E, E(BS)]
	3801532	Function lever (SILVER) [for W, W(UN), AU]
14	3801541	Band lever (BLACK) [for W, W(UN), AU, E, E(BS)]
	3801542	Band lever (SILVER) [for W, W(UN), AU]
15	3801551	Pointer
16	4594824	Tuning shaft
17	3801761	100 ϕ pulley
18	3340321	Spring
19	3801501	Select knob
20	3970221	Gear damper
21	3801591	Speaker grille
22	3368265	Lid spring
23	2403841	12cm speaker
24	2403353	Piezo tweeter
25	4418013	E ring
26	86914102	BT bind head screw (3 ϕ x 10) (gear damper, pulley holder)
27	4578972	BT flange screw (3 ϕ x 10) (12cm speaker)
28	4042941	Rear case assy (BLACK) [for W]
	4042942	Rear case assy (BLACK) [for W(UN)]

SYMBOL No.	PART No.	DESCRIPTION
28	4042943	Rear case assy (BLACK) [for AU]
	4042945	Rear case assy (SILVER) [for W]
	4042946	Rear case assy (SILVER) [for W(UN)]
	4042947	Rear case assy (SILVER) [for AU]
	4042948	Rear case assy (BLACK) [for E, E(BS)]
29	3973501	Battery lid
30	3369781	Bat. spring
31	2758231	Rod antenna
32	87444122	Bind head screw (3 ϕ x 12) (rod antenna)
33	4578976	BT bind head screw (3 ϕ x 20) (power transformer)
34	2588831	TN-21-582 mechanism assy
35	3801481	Cassette button (BLACK) [for W, W(UN), AU, E, E(BS)]
	3801483	Cassette button (SILVER) [for W, W(UN), AU]
36	4468611	Record plate
37	88151132	Lock washer
38	4578281	Screw (2.6 ϕ x 4) (record plate)
⚠39	2706584	Power supply cord [for W, W(UN)]
⚠	2706251	Power supply cord [for AU]
⚠	2707709	Power supply cord [for E]
⚠	2717902	Power supply cord [for E(BS)]
⚠40	2249604	Power transformer [for W, W(UN)]
⚠	2249602	Power transformer [for AU, E(BS)]
⚠	2249601	Power transformer [for E]
		for ACCESSORIES
⚠	2667922	Siemens plug
		CASSETTE CHASSIS
1	4818991	Main base assy
2	4818992	Switch plate
3	4832411	Push button actuator assy
4	4820212	REC button lever
5	4820213	PLAY button lever
6	4818996	RWD button lever
7	4818997	FF button lever
8	4818998	STOP button lever
9	4818999	PAUSE button lever assy
10	4818990	RWD lever
11	4819131	PAUSE lever
12	4819132	PAUSE lever spring
13	4819133	PAUSE stopper
14	4820214	Button lever spring
15	4820215	Sub chassis
16	4819007	Button lever spring
17	4819100	Button lever spring
19	4819008	Actuator spring
20	4819009	Auto lever
21	4819000	Auto lever spring
22	4820217	PLAY button lever spring
23	2789801	Leaf switch
25	4820218	Switch actuator spring
26	4820219	Head panel
27	4819014	Head base
28	4832412	Sensing plate assy
29	4820221	Head panel spring
30	4819018	MG arm
31	4819006	PR stopper
32	4819045	Screw
33	4819017	Spring
34	4820222	Pressure roller arm assy
35	4820223	Pressure roller arm spring
36	4832413	RF pulley arm
37	4820225	RF pulley arm spring
38	4832414	RF collar arm screw
39	4820227	Belt
40	4820231	Flywheel assy
41	4819575	Reel P.W.B. assy
42	4832415	Take up gear plate assy
43	4832416	Take up roller gear
44	4819020	TG plate spring
45	4832417	FF gear
46	4819037	Spring
47	4819033	Supply reel assy
48	4819034	Take up reel assy
49	4819035	Record safety lever
50	4819032	Spring
52	4819039	Motor rubber
53	4819533	Motor collar screw
54	4820235	Main belt
55	4819043	Eject slide lever
56	4819044	Eject slide lever spring
57	4820242	Pack spring
58	2557321	Erase head
59	2555671	Record playback head
60	4819063	Tapping screw (2 ϕ x 3)
61	4819068	Tapping screw (2 ϕ x 4)
62	4819607	Bind tapping screw (2 ϕ x 5)
63	4819069	Screw (2 ϕ x 6)
64	4819060	Screw (2 ϕ x 7)
65	4819600	Azimuth screw
67	4819077	Washer (1.2 ϕ x 3 x 0.4)
68	4819078	Washer (1.55 ϕ x 3.8 x 0.5)
69	4832432	Washer (2.05 ϕ x 4 x 0.5)
71	4820366	Motor assy
72	4820241	Mat
73	4819062	Lug

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